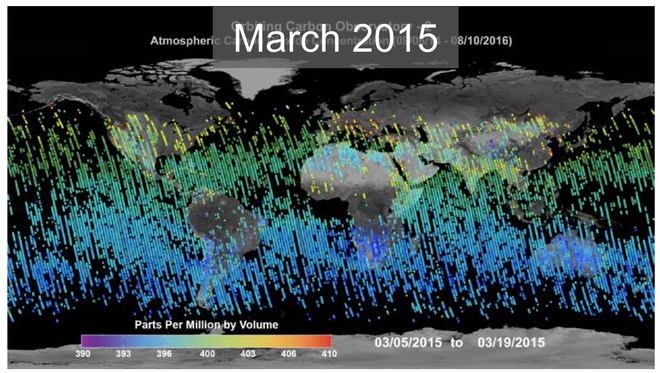
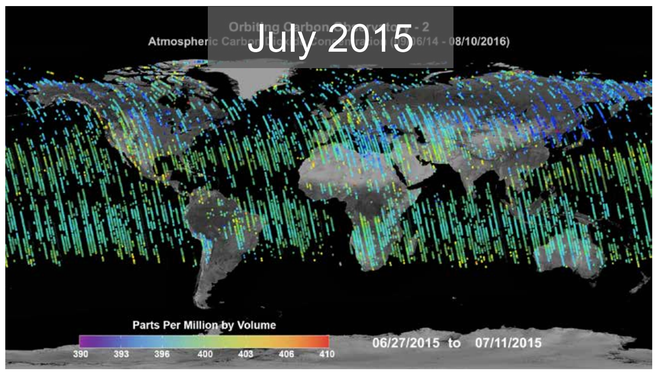
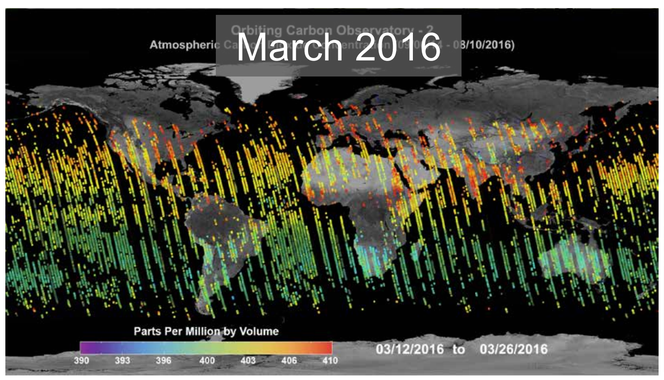
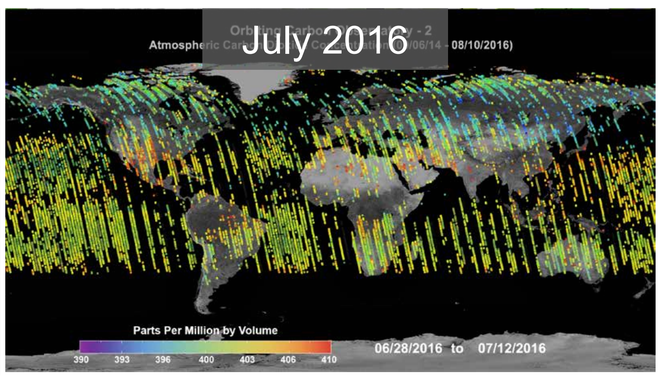
National Aeronautics and
Space Administration

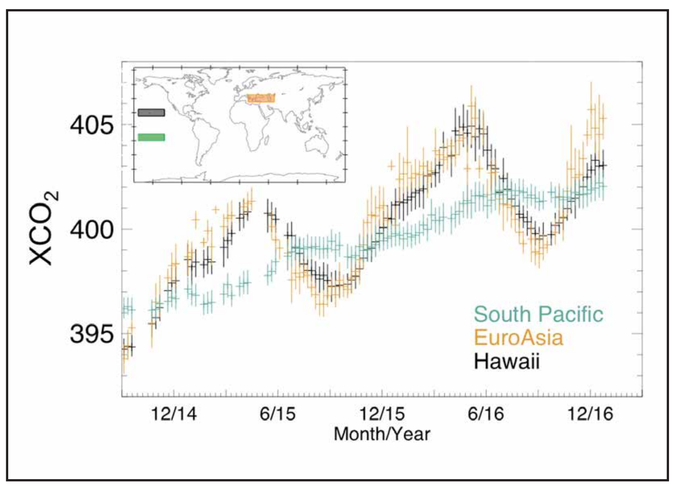








These four maps illustrate the atmospheric carbon dioxide measured from NASA's Orbiting Carbon Observatory-2 (OCO-2) mission. The increase in CO_2 concentration from one year to the next can be seen, as well as the seasonal changes between early spring and summer, where plant growth reduced CO_2 concentrations in July. *Annmarie Eldering, John Howard, NASA/JPL*



This time series of atmospheric carbon dioxide concentrations from OCO-2 data illustrates the seasonal cycles and overall increasing concentrations. In the northern hemisphere, concentrations go up during winter and early spring when plants are dormant, and then decrease over the summer as plants become active. In the South Pacific, there is little seasonal cycle because of the small land mass in the region. The overall increase from 2014 to 2016 is also clear in the data. *Annmarie Eldering, NASA/JPL*

XCO_2 Measured from OCO-2

The Orbiting Carbon Observatory-2 mission focuses on quantifying the exchange of carbon dioxide between Earth's atmosphere, oceans, and the plants on land. Since September 2014, its three-channel imaging grating spectrometer has returned high-resolution spectra of reflected sunlight in the 0.765-micron (μm) molecular oxygen (O_2) A-Band and the 1.61- and 2.06-μm carbon dioxide (CO_2) bands. Between 25,000 and 75,000 soundings each day are sufficiently cloud-free to yield full-column estimates of the column-averaged CO_2 dry air mole fraction with single sounding random errors near 0.5 parts per million (0.125%) over most of the globe. Science results are being reported; for example, data collected from March 2015 to June 2016 provided an opportunity to study the carbon-climate response to the 2015-2016 El Niño.

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